REMARKS

With careful attention to the Examiner's comments in the Office Action, the Application has been amended to place it in condition for allowance. The remarks presented herein are believed to be fully responsive to the Office Action.

Summary of Examiner Interview: Attorney (Changhoon Lee) for the Applicant would like to thank Examiner Maldonado for the helpfulness and courtesy shown in the telephonic interview with Examiner on August 20, 2010 and the follow-up interview on August 31, 2010. As Attorney discussed with Examiners at the interview, Applicant respectfully amends the independent claim 1 as recited above. In accordance with Examiner's suggestions, Applicant submits Declaration herewith to support Applicant's position as addressed below.

Status of the Claims

Claims 1, 3 and 5-14 are pending in the present application. Claim 1 has been amended. No new matter has been added. The independent claim recited by the present application is claim 1.

Support for the amendment to claim 1 can be found in the specification at, for example, paragraphs [0022]-[0027].

CLAIM REJECTIONS

A. Claim Rejections under 35 U.S.C. § 103(a)

The Office Action states that claims 1, 3, 5, 6, 8-12 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chua et al. (U.S. Patent No. 6,455,340, hereinafter "Chua") in view of Kelly et al. (U.S. Patent No. 6,740,604, hereinafter "Kelly") and Ogawa et al. (U.S. Patent No. 6,750,158, hereinafter "Ogawa").

Amended claim 1 recites a method for growing a nitride semiconductor epitaxial layer which includes the step of releasing nitrogen from the second nitride semiconductor epitaxial layer by collectively increasing a temperature of the first nitride semiconductor epitaxial layer,

nitride semiconductor epitaxial layer, and the third nitride semiconductor epitaxial layer within a growth chamber.

The Examiner admits that the combination of Chua and Kelly fails to expressly disclose wherein the heating of the first nitride semiconductor layer collectively increases the temperature of the first, second and third nitride semiconductor layer to said third temperature.

Nevertheless, the Examiner contends that "the recited limitation is seen as a heating step on the first nitride layer at a third temperature, and said heating inherently increases the temperature of the other layers."

However, the heating of the first nitride layer at a third temperature does not necessarily uniformly increase the temperature of the surrounding layers as is noted in the attached Declaration of Yoon, Euijoon. Such fact is all too clear from the prior art in which the laser beam penetrates the bottom layer for the resultant heat to be concentrated onto the interface or the sacrificial layer.

As noted in the Declaration, Dr. Yoon is a long experienced expert in the development of semiconductors for use in light emitting device. With respect to the heating method, it is pointed out that the laser beam is not used in the growth chamber recited in the present claim to increase the temperature of the semiconductor epitaxial layers. It is further noted that the laser beam in the cited references would not result in raising the temperate of the adjacent layers at the same time. Clearly, Kelly teaches away from collectively increasing the temperatures of multiple adjacent layers as shown in FIGS. 1 and 2 below.

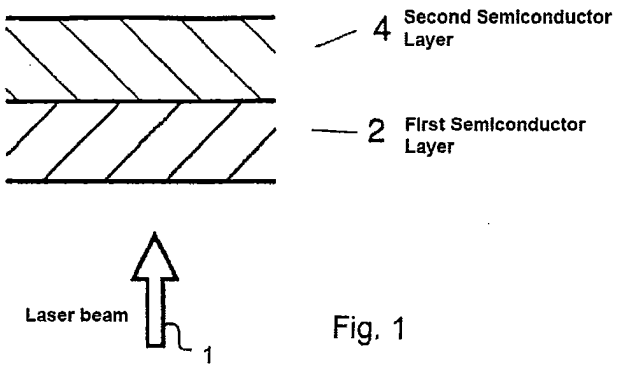

Fig. 1

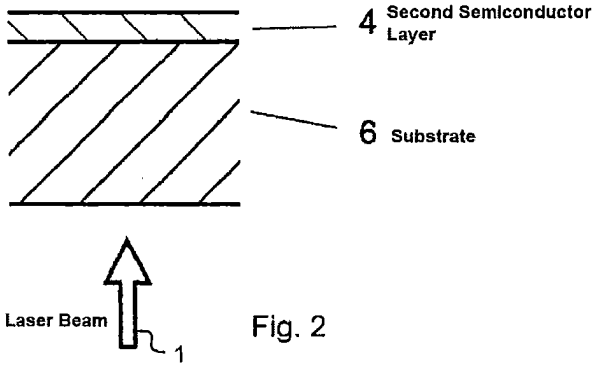

Fig. 2

When the laser beam penetrates the bottom layer for the resultant heat to be concentrated onto the interface or the sacrificial layer, the laser beam cannot uniformly increase the temperature of the bottom and top layers at the same time.

The method of amended claim 1 results in the release of nitrogen by raising the temperature of all three layers simultaneously within the growth chamber. As to the claimed process of releasing nitrogen from the second nitride semiconductor epitaxial layer 120, once the first nitride semiconductor epitaxial layer 110 is grown on the substrate 100, the second nitride semiconductor epitaxial layer 120 is grown on the first nitride semiconductor epitaxial layer 110 at a relative lower temperature of 300~800°C. Then, the third nitride semiconductor epitaxial layer 130 is grown on the second nitride semiconductor epitaxial layer 120 at a temperature similar to the growth temperature of the second nitride semiconductor epitaxial layer 120 of 300~800°C. See the para. [0021] - [0023] of the present application.

In one embodiment, a temperature is raised so that the second nitride semiconductor epitaxial layer 120 can be converted to a metal phase. In another embodiment, after the third nitride semiconductor epitaxial layer 130 is patterned to have an appropriate shape, the second nitride semiconductor epitaxial layer 120 can be converted to the metal layer 120a. If the nitride semiconductor epitaxial layer 130 is patterned to have an appropriate shape, some of the surface of the nitride semiconductor epitaxial layer 120 is exposed to environment of the growth chamber. See the para. [0026] - [0027] of the present application.

The claimed invention as amended herein recites the third step of releasing nitrogen from the second nitride semiconductor epitaxial layer by collectively increasing a temperature of the first nitride semiconductor epitaxial layer, nitride semiconductor epitaxial layer, and the third nitride semiconductor epitaxial layer within a growth chamber. It is obvious to the one skilled in the art that the laser beam cannot be used to raise the temperature of the compound semiconductor within the growth chamber. The most commercially used growth chamber is an MOCVD (Metal-Organic Chemical Vapor Deposition) device which implements a chemical vapor deposition method of epitaxial growth of compound semiconductors.

FIG. 1, as shown below, illustrates the exemplary growing process of the compound semiconductor within a growth chamber 1. A substrate 3 is put on a susceptor 2 within a growth chamber 1. The source materials for Ga, In, N and Al are supplied from pipe 5. A growth

temperature is controlled by a heater 4 under the susceptor 2. As such, the temperature of the nitride semiconductor epitaxial layers is raised collectively by the heater 4.

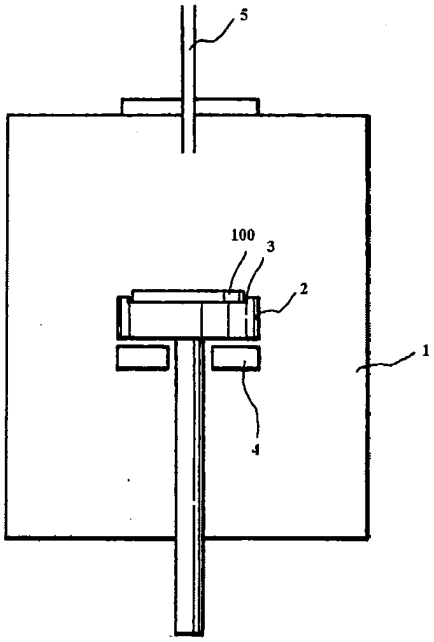

FIG. 1

Unlike the heater in the closed growth chamber environment, the laser beam in an open environment cannot uniformly increase the temperature of the bottom and top layers at the same time. There is simply no direction in Chua or Kelly to use of the growth chamber to raise the temperature of all three layers simultaneously. The only direction is through the application of forbidden hindsight.

Claims 3, 5, 6, 8-12 and 14

The Office Action rejected claims 3, 5, 6, 8-12 and 14 which depend from claim 1 as being unpatentable over Chua in view of Kelly and Ogawa. Thus, the above remarks for claim 1 are equally applicable to the dependent claims 3, 5, 6, 8-12 and 14. As such, claims 3, 5, 6, 8-12 and 14 are clearly allowable over the cited prior art.

If any issue regarding the allowability of any of the pending claims in the present application could be readily resolved, or if other action could be taken to further advance this

application such as an Examiner's amendment, or if the Examiner should have any questions regarding the present amendment, it is respectfully requested that the Examiner please telephone Applicant's undersigned attorney in this regard.

Respectfully submitted,

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